

**IN THE CLAIMS:**

Please write the claims to read as follows:

- 1    1. (Currently Amended) A method of performing echo suppression in a telecommunications system, including the steps of the method comprising:
  - 3    (A)    calculating the at least one value representing energy represented in each a plurality of pulse code modulated (PCM) sample samples of voice information received from a user's telephone equipment an input speech signal;
  - 6    (B)    building a synthetic echo envelope from said values;
  - 7    (C)    aggregating the energy data said values for the at least one samples sample over a 5 msec period of time to form a frame of an aggregate energy value for that period of time;
  - 10    (D)    solving the-a plurality of normal equations for the matrix said aggregated values, the plurality of normal equations having a plurality of results;
  - 12    (E)    populating a matrix with these aggregate energy values;
  - 13    (F)    examining the results to determine a peak aggregate result which will indicate, the peak aggregate indicating the a time delay and a gain of the an echo path; and
  - 15    (G)    evaluating each incoming PCM sample against the-a corresponding output energy result obtained at the-a determined time delay, and if the-an input speech energy is determined to be less than a historical output energy scaled by a determined gain, then the signal is classified as suppressing echo and is suppressed from the input speech signal.
- 1    2. (Original) The method of performing echo suppression as defined in claim 1 including the further step of smoothing the results of the normal equations by applying a moving average to correlations and energies over each frame across the time dimension.

1       3. (Original) The method of performing echo suppression as defined in claim 1 including  
2       the further step of determining said time delay by measuring the time elapsed between the  
3       beginning of measurements and the reaching of the peak aggregate result.

1       4. (Original) The method of performing echo suppression as defined in claim 1 including  
2       the further step of employing a voice activity detector to verify that voice information is  
3       on the line and if so, then performing steps A through F and suppressing any echo that is  
4       determined to exist.

1       5. (Currently Amended) An apparatus for performing echo suppression techniques in a  
2       telecommunications system, the apparatus comprising:

3           (A)      a receiver that receives a plurality of pulse code modulated (PCM) sam-  
4       ples of voice information from a user coupled with the system;

5           (B)      an energy accumulator coupled to said receiver that calculates the at least  
6       one energy value offor the input speech signals and aggregates the these energies energy  
7       values over a predetermined time period to create a synthetic echo envelope from said  
8       samples;

9           (C)      digital signal processing circuitry coupled with said receiver and said en-  
10       ergy accumulator that is programmed adapted to perform the following:

11                  (i)populate a matrix with energy aggregate values for 5 msec  
12                  frames;

13                  (ii)solve normal equations for said matrix;

14                  (i)     produce results and evaluate said results energy values to  
15                  find a peak aggregate value and a time lag; and

16                  (Dii)    check each incoming speech PCM sample against  
17                  said peak aggregate value and time lag to determine  
18                  whether said speech samples contain an echo; and

19                  (ED)    means for suppressing an echo suppressor responsive to said digital signal  
20                  processing circuitry for suppressing authenticity of the echo that is determined to exist in  
21                  an incoming speech sample.

1       6. (Original) The apparatus for performing echo suppression techniques as defined in  
2       claim 5 further comprising

3               a voice activity detector coupled with said receiver that determines whether in-  
4       coming samples contain speech, and if so, said echo suppression techniques are per-  
5       formed.

Please add the following claims:

1       7. (New) A system for performing echo suppression techniques, the system comprising

1               (A) a receiver that receives pulse code modulated (PCM) samples of voice in-  
2       formation from a user coupled with the system;

3               (B) an energy accumulator coupled to said receiver that calculates energy values  
4       of input speech signals and aggregates these energy values over a predetermined time pe-  
5       riod to create a synthetic echo envelope from said samples;

6               (C) digital signal processing circuitry coupled with said receiver and said energy  
7       accumulator that is adapted to:

8                       (ii) evaluate said energy values to find a peak aggregate value  
9                               and a time lag; and

10                       (ii) check each incoming PCM sample against said peak ag-  
11                               gregate value and time lag to determine whether said  
12                               speech samples contain echo; and

13               (D) an echo suppressor responsive to digital signal processing for suppressing  
14       echo that is determined to exist in an incoming speech sample.

1       8. (New) The system for performing echo suppression techniques as defined in claim 7  
2       further comprising a voice activity detector coupled with said receiver that determines  
3       whether incoming samples contain speech, and if so, said echo suppression techniques  
4       are performed.